MULTIMEDIA UNIVERSITY

STUDENT ID NO

MULTIMEDIA UNIVERSITY

FINAL EXAMINATION

TRIMESTER 1, 2019/2020

TIS3151 – SOFTWARE RELIABILITY AND QUALITY ASSURANCE

(All sections / Groups)

12 OCTOBER 2019
9:00 a.m – 11:00 a.m
(2 Hours)

INSTRUCTIONS TO STUDENTS

1. This Question paper consists of 5 pages excluding the cover page with 5 Questions only.

2. Attempt all **FIVE** questions. All questions carry equal marks and the distribution of the marks for each question is given.

3. Please print all your answers in the Answer Booklet provided.

QUESTION 1

a. It is a fact that to ensure quality assurance in software is much more challenging than in hardware product. Explain why?

[3 Marks]

b. Mike is a new programmer in a software development company. He was informed by the chief software engineer that he has made logical design errors that caused software errors. Give **THREE (3)** examples of logical design errors.

[3 Marks]

c. Answer the question based on the discussion below:

"The new version of loan software is really accurate. We have processed 4000 customer requests, and checked each of the output contracts. There were no errors. Unfortunately, we did face severe unexpected problems – training new staff to use the software takes about two weeks that causes high employee turnover (due to system complexity). In addition, the software could not produce standard output that can be used as input for reporting software."

Identify the missing McCall's quality factors in the discussion above. Justify your answer.

[4 Marks]

Continue...

QUESTION 2

a. Aimin is a software tester and he needs to conduct unit testing on modules A, B and C. The direction of the testing is A->B->C.

Scenario 1: *Code A has been developed and needs to be tested, but codes B and C still need to be developed, and code A will not run without the input of B and C.*

Scenario 2: *Imagine now that codes B and C have been developed and need to be test, however code A still needs to be developed, and likewise the other two codes won't work without the inputs from code A.*

How would you handle these scenarios?

[4 Marks]

b. Differentiate between design review and peer review in terms of 'authority' and 'participants'.

[4 Marks]

c. In your opinion, why hardware metrics are not suitable to assess the reliability of software products?

[2 Marks]

Continue...

QUESTION 3

a. Complete the C++ program below (line 2 and line 5) to demonstrate the implementation of "information hiding" technique in programming.

[2 Marks]

```
1. class Circle {                    // classname
2. //make data members accessible and available within this class only
3.         double radius;            // Data members (variable)
4.         string color;             // Data members (variable)
5. // make member functions accessible and available to all in the system
6.         double getRadius();       // Member functions
7.         double getArea();
8.             }
```

b. One way to ensure the quality of the software is to use reliable technique when developing the software, for example, avoid using error prone constructs in programming. Identify **THREE (3)** error prone constructs of C++ programming language and state the reason why these constructs have to be used in great care.

[3 Marks]

c. What are the **FIVE (5)** criteria that can be used to make comparisons between function point and KLOC?

[5 Marks]

Continue...

QUESTION 4

a. What will be the deliverables from Verification and Validation (V&V) activities in terms of documents? State any **TWO (2).**

[2 Marks]

b. The Quality Manager wants to conduct Verification and Validation activities for the new complex project. How will he convince the management on the benefits of Verification and Validation activities? State any **TWO (2)** benefits.

[3 Marks]

c. Deming's wheel is greatly used in Total Quality Management(TQM). Explain the stages in the Deming's wheel?

[3 Marks]

d. In TQM how is a 'process' defined?

[2 Marks]

Continue...

QUESTION 5

a. A project team was working towards a deadline on tight schedule. One of the main programmers, who had health issues, was hospitalized suddenly due to a heart attack. The team leader tried to find a replacement for him at that juncture. What type of risk management did the team leader show?

[2 Marks]

b. A project manager refuses to allow his team members to attend conferences or training.

i. What is the type of risk involved in this situation?

[1 Mark]

ii. How will this risk affect the company and the team in the long run?

[2 Marks]

c. During an ISO audit, what are the main sources of information to the audit team?

[2 Marks]

d. TOP Software Sdn. Bhd. wants to apply CMMI within the company. What are the **THREE (3)** selections they need to make for process improvement?

[3 Marks]

End of Page